PARCC Mathematics Performance Tasks

BE A "SMART" CALCULATOR

Overview

At a Glance	Groups of three students draw cards and find the sum of the numbers drawn. The goal is to find a way to arrange the numbers to make the calculation quick (and accurate).
Grade Level	Grade 1
Task Format	• Small groups (3 students per group); modeled whole class • Individual (Exit Slip activity) • Task will be repeated over a series of 4–5 days with the culminating activity being the completion of a Student Exit Slip, completed individually.
Materials Needed	***For each student*** • 1 small white board with marker or scratch paper. • 1 Recording Sheet (template provided) and 1 pencil • 1 Student Exit Slip (provided), to be completed as a culminating activity ***For each group of students*** • 1 set of number cards (0-5 for Part 1; 1 - 10 for Part 2) (templates provided) • Student Sentence Starters (template provided), cut to one half-sheet to be available for each group • *Extension/Elaboration:* 1 set of number cards 11–20 ***For the teacher*** • Observation Checklist
Prerequisite Concepts/Skills	• Using numerals to describe quantities • Familiarity with the concept of addition as "adding to" • Familiarity with the concept of subtraction as "taking apart" or "taking from" • Modeling addition and subtraction with concrete objects, fingers, or drawings • Identifying and describing numbers to 10, decomposed in a variety of ways. • Adding and subtracting fluently within 5

Content Standards Addressed in This Task	
1.OA.B.3	Apply properties of operations as strategies to add and subtract. Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)
1.OA.C.6	Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows that 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13)
1.OA.A.2	Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
Extensions and Elaborations	
2.OA.B.2	Fluently add and subtract within 20 using mental strategies. By end of grade 2, know from memory all sums of two one-digit numbers.
2.NBT.B.5	Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
2.NBT.B.9	Explain why addition and subtraction strategies work, using place value and the properties of operations.
Standards for Mathematical Practice Embedded in This Task	
MP3	Construct viable arguments and critique the reasoning of others.
MP7	Look for and make use of structure.

GET READY: Familiarize Yourself with the Mathematics

This task assesses students' understanding of how to be strategic, using properties of addition, to add collections of several numbers efficiently. This task is in two parts that increase in difficulty.

Part 1: Students add three numbers, all addends ≤ 5 (using the set of cards provided). The greatest sum possible is 15. Students begin to experiment with the use of the commutative and associative properties of addition to add three small numbers. Students may initially add any two of the three numbers (demonstrating fluency within 10) and then count on from there, or use some other strategy, to add the third number.

Part 2: Students progress to addends 1 - 10, allowing for the possibility of sums greater than 10, prompting students to apply the commutative and associative properties of addition and other addition

strategies to larger numbers. The deck provided for this part is "stacked" to ensure particular outcomes, which provide opportunities for students to use the strategies described in 1.OA.C.6. Strategies such as decomposing one number to make a 10, counting on from the larger of two addends, and decomposing a number to make doubles are quite useful and should be encouraged as students play this game. Note that in Part 2, sums greater than 20 are possible. This goes beyond the grade 1 standard, but provides an opportunity to learn about a student's ability and understanding. If it proves too difficult or frustrating for students, have them draw a card that makes the total ≤ 20.

Each part is its own subtask. You may choose to begin all students on Part 1 and, depending upon your observations, move some students to Part 2, or you may return to implement Part 2 at a later date with your whole class, entirely at your discretion.

Commutative and associative properties of addition

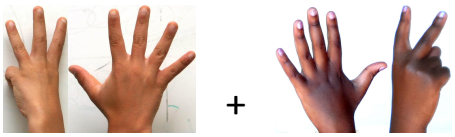
Together, the commutative and associative properties form what might be called the "any-order-any-grouping" property: numbers can be added in any order at all and the result will be the same. In early grades, these properties *should not be distinguished and need not be named*. (In fact, since no parentheses are used in arithmetic expressions in the early grades, no explicit teaching of the associative property is even meaningful.) What students *do* need to learn at this age, and use thoughtfully, is the fact that, *for addition*, numbers can be strategically rearranged to make calculation more convenient. It is also important for them to know that this does *not* apply to subtraction: 7 – 3 is *not* the same as 3 – 7.

This Smart Calculator task asks students to physically enact the combined commutative and associative properties of addition by arranging number cards strategically or physically moving the cards to pair specific numbers. For example, when adding 7 + 6 + 3, students can stack the cards [7] and [3] to show that together they make 10 or might group 7 + 3 in some other way, like having the players who are holding [7] and [3] stand side by side. Seeking a pair that makes 10 reduces the work of the calculation, making the sum 16 apparent, and avoiding a 7 + 6 step followed by a 13 + 3 step.

The object of the standard is that students be able to use these properties seamlessly in tandem with one another; the standard does not require that students distinguish the two properties or know the names for either one. Your focus should remain on both teaching and observing your students on *how* these any-order-any-grouping properties of addition can be used to make adding and subtracting more efficient. While the standard 1.OA.B.3 states "add and subtract," subtraction does not have these any-order, any-grouping properties; what a student then must come to understand is the relationship between subtraction and addition (NCTM, 2009). For example, to solve 7 – 4 = ___, a student can understand it in any of several ways: knowing the fact 3 + 4 = 7; understanding it as asking "what can be added to 4 to make 7," or seeing it as asking "how far is 4 from 7." Each of the last two ways suggests addition and reinforces the connection between subtraction and addition.

The goal in all cases is for students to be more *flexible* and *efficient*, often able to name a sum *mentally* by performing simpler calculations. A student may think, and even explain, "I know that 4 + 8 + 6 is the same as 6 + 4 + 8. So I can make a 10 (from 6 + 4) and add 8 more, which equals 18." Standard 1.OA.C.6 discusses the various strategies that you may find your students using, including counting on, decomposing a number leading to a ten, and creating equivalent but easier or known sums. Without formally distinguishing the commutative and associative properties, the student is correctly using both as a strategy for being a "smart" calculator.

A subtle use of the properties is in play when a child explains "I know that 6 + 5 is eleven because 5 + 5 is 10." The child does not have to make explicit the decomposition of 6 into 5 + 1 and then transformation of 6 + 5 into 5 + 1 + 5 and then the rearrangement that produces 10 + 1. That is far fussier than is appropriate in grade 1. But children *should* get chances to see that 8 + 7 can be thought of as



and that those can be thought of as

and so 8 + 7 is the same as 10 + 5, so it's 15.

Another standard embedded within the task is 1.OA.A.2, which calls for solving word problems that require the addition of three whole numbers. This task focuses entirely on the latter part of the standard: adding three whole numbers. Within this context, students use and apply both the commutative and associative properties.

Standards for Mathematical Practice

Students build their mathematical habits of mind around two Standards for Mathematical Practice during this task: *MP3: Construct viable arguments and critique the reasoning of others* and *MP7: Look for and make use of structure*. Students justify their reasoning of specific addition strategies (MP3) as they apply and integrate both the commutative and associative properties of addition. Students are given multiple opportunities to critique other students' justifications. They are prompted with questions including, "Do you agree or disagree…? Why or why not?" This dialogue helps foster the development of justification and reasoning even in very young students. Students are engaged in MP7 any time they compose a ten from 2 addends or decompose a number to make a calculation. Strategies such as recognizing and using doubles also make use of structure.

For More Information

National Council of Teacher of Mathematics (NCTM). (2009). *Focus in grade 1: Teaching with curriculum focal points.* Reston, VA: author.

Richardson, K. (2012). *How children learn number concepts: a guide to the critical learning phases*. Bellingham, WA: Math Perspectives Teacher Development Center.

GET SET: Prepare to Introduce the Task

1. Gather the materials listed on page 1. Be sure to use the template provided or a similar set of cards. These sets are "stacked" to promote particular outcomes of sums ≥ 10 in Part 2. **Note**: In Part 2, sums greater than 20 are possible. This goes beyond the grade 1 standard, but provides an opportunity to learn about a student's ability and understanding. If it proves too difficult or frustrating for students, have them draw a card that makes the total ≤ 20.
2. Divide students into groups of three students each. Together, these students will engage in discourse throughout the task as "talk buddies" using the strategy "turn-and-talk." In this strategy, students have the opportunity to *think* individually and then *turn* to a partner (or group) and *talk* to discuss how to solve each problem.
3. Model the game to the whole class to start.
4. To start the game, place all number cards face down in a mixed deck on a table or hard surface. Each student should have a white board and marker available. Observe groups as you feel it is most useful; the GO section "Observations of Students" column may help.
5. Once students have had ample opportunities to engage in the task, observe students individually as they complete the Exit Slip. Additional information is included on pages 12–13.

Introducing the Task

Explain to students that the goal of this game is to find the easiest or most efficient way possible *for them* to calculate a mental sum. Each student selects a number card, reads the number, and holds the card up for others to see. Then, individually, students calculate the sum of the numbers and describe the strategy they used.

Below is one way a teacher might introduce a group of three students to the game. Throughout this document, when specific language is suggested, it is shown in *italics.*

1. *Each of you, choose a card from the pile. Now hold that card up and read it aloud.*
2. *Now, each of you, find a quick way to add all of those numbers. You might find a pair that makes ten or some doubles or you might count up from the biggest number. You choose how to do it.*
3. *Write down your method on the white board.*
4. To first student: *Tell us about the way you did this*. (to others) *Did you do it the same way? Tell us your way.*

The round ends when each student has shared. The cards go to the bottom of the deck and students start a new round by drawing new cards. Play until you decide time is up.

Over a series of days, students can play in small groups independently and gain practice with applying various strategies to add. You may decide to have students begin playing using white boards and later transition them to recording their equations on the Recording Sheet. As you observe, you will learn a great deal about *how* students are solving the problems and the specific strategies that they are using.

To determine whether students have generalized the properties as strategies for addition, the task culminates with an Exit Slip for each student to complete. Use the exit slips one-on-one or in small groups so that you can closely observe *how* your students solve each problem.

Preparing to Gather Observation Data and Determine Next Steps in Instruction

As students engage in the task, the notes in the next section will help you identify students' current strengths and possible next steps for instruction. As you observe, use whichever form of the Observation Checklist that best helps you record your observations of students and other relevant evidence as you see it: Individual, Partner, or Class. These varied forms, available at the end of this document and in a separate MS Excel file, are intended to give you a choice about how to collect notes on your students and determine possible next steps for instruction.

Addressing Student Misconceptions/Errors

For some students, it may be beneficial to model the numbers being added with physical manipulatives, such as counters. For example, when combining 5 + 3, students can model moving from an easier "known" fact 4 + 4 to an "unknown" fact by moving one of the counters from the first addend and combining it with the second addend. Modeling in this way builds students conceptual understanding around the idea that the total sum remains unchanged when the 2 (or more) addends are decomposed and reorganized in different combinations.

Extensions and Elaborations

One way to extend the task is to have students apply their understanding of the commutative and associative properties of addition to adding numbers fluently within 20 using *only* mental strategies (standard 2.OA.B.2) or to adding numbers within 100 (standard 2.NBT.B.5). To address the *fluency* aspect of standard 2.OA.B.2, focus on having students perform *only* mental arithmetic. No recording is needed since your focus is on how they calculate the mental sums quickly and efficiently.

To have students explore standard 2.NBT.B.5, include one set of number cards 11–20 into the existing deck. This extension provides an introductory experience with adding numbers greater than 20 but less than 100. Students may solve these using their white boards or on their Recording Sheet.

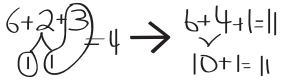
Another elaboration of the task is to have students choose *more than* 3 number cards. For example, in this variation, you may have the existing group of three students each choose 2 number cards (for a total of 6 addends), or you may also decide to expand the size of the groups so that students are adding more than 3 addends. In this variation, each student chooses 1 number card, but the group size is larger, so the sum includes 4 or more addends.

You may also choose to have students construct a written justification in response to a peer's idea. First, students begin constructing arguments and critiquing reasoning orally, using informal language that is most natural to them. As students become increasingly proficient in expressing their ideas aloud, they become more ready to take the next step and record their ideas in written form. Eventually the emphasis shifts towards providing written evidence as students move into the upper elementary grades.

GO: Carry Out the Task

Task Steps	Keep in Mind	Observations of Students
1. Ask each player to select a number card from the deck. Instruct students to read their numbers aloud and to hold their card numbers out so everyone can view them. SAY: *Show us your number and say it out loud.* **Note**: It may benefit some students to use a sentence starter when responding aloud: "The number I chose is…. " or "My number is…"	• Part 1: Students begin with adding three numbers with all addends ≤ 5. The greatest sum possible is 15. Have students play *only* with number cards 0–5. • Part 2: Students include addends 6, 7, 8, 9 and 10. Use the set of cards provided in the template. • Most students possess an understanding of written numbers 0–10 at this point in their development. They can typically work with written numerals already knowing that each numeral represents a number of concrete objects. For example, students see "3" and know that it can be represented as  ,  , or  . Students understand the relationship between numbers and quantities.	A. Student requires teacher or peer support to read his or her chosen number aloud. B. Student instantly recognizes and reads his or her chosen number aloud.
2. Remind students that the goal is to add their numbers in the easiest or most efficient way possible *for them* to calculate a mental sum. Prompt students to think individually and then turn and talk with their group members to discuss some potential strategies. SAY: *Let's do a turn-and-talk. A turn-and-talk is when you first take a moment to think by yourself and then you turn to your partners to talk about your ideas. Take a moment to think by yourself about*	• Keep in your own mind, and emphasize to students, that every person may find ways that are best *for them*, and that the strategies may differ. *What is most important is that each student is finding ways to add that are easy and efficient specific to him or her.*	C. Student provides little to no explanation for the reasoning used to add efficiently, even with the support of a sentence starter. D. Student attempts to explain his or her reasoning and provide a justification for the rationale used. However, the justification is often incomplete or flawed. E. Student is able to thoroughly and completely explain his or her reasoning and provide a justification for the rationale used without support.

Task Steps	Keep in Mind	Observations of Students
how you can add these numbers easily and efficiently. (Pause). *Now, turn and talk to your partners about an easy way you can add these numbers.* For students who might need additional prompts: • *How can you add these numbers easily and efficiently? Explain how you know.* • *What strategies will help you add? Explain how you know.* It may be beneficial to have students use the following sentence starters to appropriately scaffold the conversation: • "I will use the strategy of _____ , because…" • "This strategy makes sense because…"		
3. After students have had the opportunity to share, have them arrange their cards to model the strategies used to perform mental calculations. They can do this by placing the cards on top of one another. You may also choose to have students physically move while holding their numbers to pair specific numbers together. For example, when adding 7 + 2 + 3, students can put their cards [7] and [3] on top of one another to show that together they compose the sum of 10. Students may also group 7 + 3 together by having the players	• How do students add? Do students… – rearrange addends to facilitate mental addition—the commutative property of addition? E.g., thinking of 8 + 5 + 2 as (8 + 2) + 5 = 15. Note, students are not expected to write parentheses, though you and they may enjoy using that way to show the grouping. – group specific addends to facilitate mental addition—the associative property of addition? E.g., thinking of 2 + 6 + 4 as 2 + (6 + 4) which is 2 + 10 = 12. • What specific strategies do students use? – Counting on from a given number. E.g., 9 +	F. Student adds each number consecutively in the order it appears in the equation. G. Student relies heavily on using fingers as a concrete support for counting and adding. H. Student demonstrates evidence of understanding 1 addition strategy to facilitate adding effectively. I. Student demonstrates evidence of understanding more than 1 addition strategy to facilitate adding efficiently. J. Student knows and combines parts instantly without needing to count. Student is quick and accurate in his or her mental calculations.

Task Steps	Keep in Mind	Observations of Students
holding [7] and [3] stand side by side to model the sum of 10. You may also find that students immediately want to write their numbers on their white boards (or Recording Sheet) to record their thinking. If so, allow it and skip to Step 4.	3 by thinking 9, 10, 11, 12)? – Substituting 10 for 9 and then adjusting. E.g., thinking 9 + 3 is one less than 10 + 3. – Finding a pair whose sum is 10? E.g., 7 + 3 = 10 – Forming 10?. E.g., 9 + 3 = (9 + 1) +2 = 10 + 2 = 12 – Using easier but equivalent known sums? E.g., using doubles and then adjusting; 6 + 7 = 6 + 6 + 1. • Do students combine parts instantly and compute mentally?	
4. Next, have students calculate the mental sum of the numbers. Students may record their thinking on their individual white board and eventually move to a written recording using the Blank Student Template. (You may also choose to have some students skip directly to the Blank Student Template).	• When students use the **white board**, they should record the strategies used in whatever way makes sense to them. This may involve writing a formal equation or a more inventive written representation. See the example of 6 + 2 + 3 below. The student showed how he decomposed 2 to 1 + 1 to be able to combine 6 + 4 as a sum of 10.  • When students use the **Recording Sheet**, they move towards recording their strategies using formalized equation forms. This template is modeled after the Student Exit Slip. This gives students experience recording their strategies throughout the game *prior to* encountering the Exit Slip as a culminating activity. Students should write the addends and then rewrite the	K. Student attempts to record strategies, but the strategies used either do not make sense and/or student requires additional support. L. Student records strategies in a way that makes sense and is able to explain his or her thinking, when prompted. M. Student is able to transition to correctly record the strategies used on the Recording Sheet.

Task Steps	Keep in Mind	Observations of Students
	problem to show the strategies they used to solve it. • Have students record their strategies *individually*. If students have had ample experience with this, you may have students record their strategies in *pairs*. This allows two students to work together to discuss and show the mental strategies used to solve the problem.	
5. Prompt students for a justification. Ask students to turn-and-talk to discuss whether or not they agree or disagree with the strategies used. SAY: *What strategy was used to add the numbers more simply (or efficiently)? Why did this strategy make sense or not? Explain how you know.* *Do you agree or disagree with _____'s strategy? Explain how you know.* *Can you use this strategy in other cases?*	• MP3 prompts even young students to construct a viable argument and critique the reasoning of others. Here, students have the opportunity to justify and explain their rationale and have others respond. • Many students will benefit from having access to sentence starters to provide language support to their justification. You may choose to provide the half-sheet Student Sentence Starters template to each group, which includes the following: – "I used _____ (strategy) to make adding easier, because _____." – "This strategy made sense because _____." – "I agree with _____'s strategy because _____." – "I disagree with _____'s strategy because _____."	N. Student provides little to no explanation for the reasoning used to add efficiently, even with the support of a sentence starter. Student significantly struggles to critique others' reasoning and provides little to no evidence of being able to agree or disagree with a peer's assertion. O. Student attempts to explain his or her reasoning and provide a justification for the rationale used. However, the justification is often incomplete. Student is inconsistent when providing a critique of others' reasoning. Student at times offers flawed rationale; however, he or she may also offer a thoughtful response. P. Student is able to consistently explain his or her reasoning and provide a justification for the rationale used. Student's explanation is thorough and complete. Student is able to provide a consistent and thoughtful critique of others' reasoning by agreeing or disagreeing with a peer's assertion.

Task Steps	Keep in Mind	Observations of Students
6. Have students play *at least* two more rounds of this game, so they complete a minimum of three rounds in the given time period. You will probably want to continue to have students play this game over a series of 4–5 days to gain further practice and to allow you to observe each student.		
7. After students have had ample opportunities to play *both parts* of this game, carry out the Exit Slip as a culminating activity for each student.		• See Individual Exit Slip instructions below.

Note about Part 2: Repeat the steps and observations of Part 1, but include all of the cards in that deck. Remember the deck is "stacked" so include all of the cards in the template. Using this deck, sums greater than 20 are possible. This goes beyond the grade 1 standard, but provides an opportunity to learn about a student's ability and understanding. If it proves too difficult or frustrating for students, have them draw a card that makes the total ≤ 20.

Individual Exit Slip: Demonstrating an Understanding of the Commutative and Associative Properties

The purpose of the Individual Exit Slip is to isolate individual students' understanding of addition strategies, giving specific focus to the commutative and associative properties. The Exit Slip should take approximately 5 minutes to complete and is meant to be interactive between you and the student. You will prompt the student to explain his or her thinking orally, which will allow you to gain insight into each student's thinking and plan next steps in instruction.

Task Steps	Keep in Mind	Observations of Students
1. Invite each student individually to sit with you to complete the Exit Slip. Explain to the student that he or she will solve five problems, applying the strategies that were practiced in the game. For each problem, the student will first look for a strategy to facilitate calculating an efficient mental sum. He or she will then rewrite the problem to show the strategy used and solve the problem.	• Pay careful attention as to whether students generalize addition strategies practiced during the game, specifically the commutative and associative properties, and apply them to completing the Exit Slip. • Students are meant to apply the commutative and associative properties in conjunction with one another. They need not be distinguished by students or named, but should be used thoughtfully and strategically as a combined any-order-any-grouping property when solving problems.	A. Student solves each problem by adding the addends consecutively in the order they appear in the equation. B. Student uses one (or more) properties of operations to facilitate mental addition/subtraction: ❑ Rearranges addends (commutative property of addition) ❑ Groups specific addends together (associative property of addition) C. Student uses specific strategies in conjunction with properties of operations: ❑ Counting on from a given number (9 + 3 = 9, 10, 11, 12) ❑ Finding a pair whose sum is 10 (7 + 3 = 10) ❑ Forming 10 by decomposing (9 + 3 = (9 + 1) +2 = 10 + 2 = 12) ❑ Using easier but equivalent known sums (e.g., using doubles to add doubles +1 or doubles –1; 6 + 7 = 6 + 6 + 1) D. Student requires teacher support to apply addition strategies throughout the game and continues to require teacher support when solving most problems included on the Exit Slip. E. Student demonstrates an understanding of addition strategies used during the game, but

Task Steps	Keep in Mind	Observations of Students
		requires teacher support to solve most problems included on the Exit Slip. Student does not generalize the strategies used and struggles to apply them across a variety of contexts. F. Student uses and applies the addition strategies used during the game when solving the problems included on the Exit Slip. Student is able to generalize the strategies used across a variety of contexts.
2. After the student solves each problem, prompt him or her to justify the strategy used and explain why it makes sense. SAY: *What strategy did you use to make adding easier?* *How did your strategy make adding these numbers easier for you? Explain how you know.*		G. Student provides little to no explanation for the reasoning used to add efficiently, even with the support of a sentence starter. H. Student attempts to explain his or her reasoning and provide a justification for the rationale used. However, the justification is often incomplete. I. Student is able to consistently explain his or her reasoning and provide a justification for the rationale used. Student's explanation is thorough and complete.

OBSERVATION CHECKLIST

ASSESSING STUDENT UNDERSTANDING: BE A "SMART" CALCULATOR

Use this page to record observations about individual students. Use the letters on the right to notate each event as you see it unfold. This record is intended to help you plan next steps in your instruction for your students.

Student Name	Observation Notes	Possible Individual Observation Points	
		FLUENCY A. Student requires teacher or peer support to read his or her chosen number aloud. B. Student instantly recognizes and reads his or her chosen number aloud. **EXPLAINING REASONING** C. Student provides little to no explanation for the reasoning used to add efficiently, even with the support of a sentence starter. D. Student attempts to explain his or her reasoning and provide a justification for the rationale used. However, the justification is often incomplete or flawed. E. Student is able to thoroughly and completely explain his or her reasoning and provide a justification for the rationale used without support. **STRATEGIES** F. Student adds each number consecutively in the order it appears in the equation. G. Student relies heavily on using fingers as a concrete support for counting and adding. H. Student demonstrates evidence of understanding 1 addition strategy to facilitate adding effectively. I. Student demonstrates evidence of understanding more than 1 addition strategy to facilitate adding efficiently. J. Student knows and combines parts instantly without needing to count. Student is quick and accurate in his or her mental calculations.	**REPRESENTATION** K. Student attempts to record strategies, but the strategies used either do not make sense and/or student requires additional support. L. Student records strategies in a way that makes sense and is able to explain his or her thinking, when prompted. M. Student is able to transition to correctly record the strategies used on the Recording Sheet. **EXPLAINING REASONING** N. Student provides little to no explanation for the reasoning used to add efficiently, even with the support of a sentence frame. Student significantly struggles to critique others' reasoning and provides little to no evidence of being able to agree or disagree with a peer's assertion. O. Student attempts to explain his or her reasoning and provide a justification for the rationale used. However, the justification is often incomplete. Student is inconsistent when providing a critique of others' reasoning. Student at times offers flawed rationale; however, he or she may also offer a thoughtful response. P. Student is able to consistently explain his or her reasoning and provide a justification for the rationale used. Student's explanation is thorough and complete. Student is able to provide a consistent and thoughtful critique of others' reasoning by agreeing or disagreeing with a peer's assertion.

Be a Smart Calculator - Cards 0 - 5

For Part 1 of the task use this set of cards.
The small "1" in the lower corner indicates that card is part of this set.

0 1	0 1
0 1	1 1
1 1	1 1

2

1

2

1

2

1

3

1

3

1

3

1

4

1

4

1

4

1

5

1

5

1

5

1

1

1

1

1

Be a Smart Calculator - Cards 1 - 10

For Part 2 of the task use this set of cards.
This deck is "stacked" to promote particular outcomes of sums ≥ 10.
The small "2" in the lower corner indicates that card is part of this set.

1 2	2 2
2 2	3 2
3 2	4 2

4

2

4

2

5

2

5

2

6

2

6

2

6

2

7

2

7

2

8

2

9

2

10

2

2

2

2

2

Be a Smart Calculator - Cards 11 - 20

For the Extension portion of the task, use this set of cards.
The small "E" in the lower corner indicates that card is part of this set.

11 E

12 E

13 E

14 E

15 E

16 E

17

E

18

E

19

E

20

E

E

E

E

E

Name _____ Student Recording Sheet Date_____

Directions: Rewrite each problem to show the strategy that you used to add. Then solve each problem.

Round _____

_____ + _____ + _____ = _____

Rewrite to show the strategy you used to add. Then solve each problem.

Round _____

_____ + _____ + _____ = _____

Rewrite to show the strategy you used to add. Then solve each problem.

Name _____ Date _____

Be a "Smart" Calculator - Student Exit Slip

Directions: Solve each equation. Show how you calculated each total by showing your thinking in the space below. Explain the strategy that you used to solve each problem to your teacher.

a) $8 + 6 + 4 = \_\_\_\_\_$

b) $\_\_\_\_\_ = 7 + 2 + 2$

c) $\_\_\_\_\_ = 3 + 4 + 3$

d) $8 + 7 + 2 = \_\_\_\_\_$

e) $\_\_\_\_\_ = 9 + 2 + 9$

Be a Smart Calculator - Sentence Frames

Teacher directions: Cut and provide copies to groups of students to scaffold their responses.

I used the strategy of _____ to make adding easier because _____.

This strategy made sense because _____.

I agree with _____ because _____.

I disagree with _____ because _____.

Cut along the line.

Be a Smart Calculator - Student Sentence Frames

I used the strategy of _____ to make adding easier because _____.

This strategy made sense because _____.

I agree with _____ because _____.

I disagree with _____ because _____.